

CLAIMS**WHAT IS CLAIMED IS:**

1. A transmitting apparatus for a wireless communication system, comprising:  
a spreader for spreading a transmit signal;  
5 at least two antennas;  
a plurality of RF transmitters operatively coupled to the antennas for converting an input signal to an RF signal and outputting the RF signal through the antennas; and  
a time switching transmission controller coupled between the spreader and the RF transmitters, for mutually exclusively switching an output of the spreader between the  
10 plurality of transmitters in non-overlapping time intervals, thereby providing transmission time diversity.
2. The transmitting apparatus of claim 1, wherein the time switching transmission controller comprises:  
a controller having pre-stored switching patterns, for generating a switch  
15 controlling signal based on one of the pre-stored switching patterns, said controlling signal being generated at said fixed non-overlapping predetermined time interval; and  
a switch connected between an output terminal of the spreader and an input terminal each of said plurality of RF transmitters, for switching the output of the spreader to a corresponding RF transmitter based on the switch controlling signal.
- 20 3. The transmitting apparatus of claim 2, wherein the controller comprises:

a reference cycle storage for storing a reference switching cycle value;  
 a counter for counting clock pulses of a base station and outputting a counted value  
 based on the reference switching cycle value;  
 a memory for storing a plurality of switching patterns and outputting one of said  
 5 plurality of switching patterns based on the counted value; and  
 a control signal generator for generating the switch controlling signal according to  
 the switching pattern selected from the memory.

4. The transmitting apparatus of claim 3, wherein the memory stores at least  
 one of a sequential switching pattern, a random switching pattern, a switching pattern  
 with a uniform switching cycle, and a switching pattern with a variable switching cycle,  
 and the control signal generator generates the switch controlling signal with length equal  
 to an integer multiple of an orthogonal code length.

5. A transmitter device in a mobile communication system, comprising:

- i) a plurality of dedicated channel transmitters, each channel transmitter  
 15 having at least two antennas, a plurality of RF transmitters operatively coupled to the  
 antennas for converting an input signal to an RF signal and outputting the RF signal  
 through the antennas,
- ii) a dedicated channel spreader for spreading a dedicated channel signal,
- iii) a time switching transmission controller connected between the  
 20 dedicated channel spreader and the RF transmitters, for switching the output of the

spreader between the RF transmitters in non-overlapping time intervals; and

iv) a pilot channel transmitter having a symbol distributor for distributing pilot channel symbols to the antennas, a plurality of orthogonal spreaders for spreading the distributed symbols by different orthogonal codes, and a plurality of PN spreaders for spreading the orthogonally spread signals by PN codes and outputting the PN spread signals to the RF transmitters.

6. The transmitter of claim 5, wherein the time switching transmission controller comprises:

a controller having switching patterns, for generating a switch controlling signal based on a switching pattern at a predetermined time; and

a switch connected between an output terminal of the spreader and input terminals of the RF transmitters, for switching the output of the spreader to a corresponding RF transmitter based on the switch controlling signal.

7. The transmitting device of claim 6, wherein the controller comprises:

a reference cycle storage for storing a reference switching cycle value;

a counter for counting clock pulses of a base station and outputting the counted value based on the reference switching cycle value;

a memory for storing switching patterns and outputting a switching pattern based on the counted value; and

a control signal generator for generating the switch controlling signal according to the switching pattern received from the memory.

8. The transmitting device of claim 7, wherein the memory stores at least one of a sequential switching pattern, a random switching pattern, a switching pattern with a uniform switching cycle, and a switching pattern with a variable switching cycle, and the control signal generator generates the switch controlling signal as long as an integer multiple of an orthogonal code length.

9. A channel receiving device in a mobile communication system, comprising:  
a pilot channel receiver for despreading a pilot channel signal from an input signal and estimating phase and time values;

a reception controller for selecting the estimated phase and time values according to the switching cycle and pattern of a TSTD (time switching transmission diversity) signal from a base station through at least two antennas at the base station; and

a traffic channel receiver for receiving the TSTD signal from the base station, detecting a channel signal based on the estimated time value, and correcting a phase error of the detected channel signal based on the estimated phase value, for demodulation.

10. The channel receiving device of claim 9, wherein the traffic channel receiver comprises:

a PN despreader for PN-despreading the input signal at a time position in accordance with the estimated time value;

an orthogonal despreader for despreding the PN-despread signal by a corresponding channel orthogonal code; and

a demodulator for correcting a phase error of the orthogonal despread signal based on the estimated phase value.

11. A channel receiving device in a mobile communication system, comprising:  
 a plurality of pilot channel receivers for receiving Orthogonal Transmission  
 Diversity (OTD) pilot signals through at least two antennas, and estimating phase and  
 time values of corresponding pilot channel signals by despreding the pilot channel  
 signals;

a reception controller for selecting estimated phase and time values according to  
 the switching cycle and pattern of TSTD signals received from a base station through at  
 least two antennas; and

a traffic channel receiver for receiving the TSTD signals, detecting a channel  
 signal based on the estimated time values, and correcting a phase error of the detected  
 channel signal based on the estimated phase values, for demodulation.

12. The channel receiving device of claim 11, wherein the traffic channel  
 receiver comprises:

a PN desreader for PN-despreding the input signal at a time position in  
 accordance with the estimated time value;

an orthogonal desreader for depreding the PN-despread signal by a  
 corresponding channel orthogonal code; and

a demodulator for correcting a phase error of the orthogonal despread signal based  
 on the estimated phase value.

13. A channel signal transmitting method in a mobile communication system,  
 comprising the steps of:

spreading a transmit signal by a corresponding orthogonal signal for a dedicated

channel;

spreading the orthogonally spread signal by a PN code; and

switchedly supplying the PN-spread signal to a corresponding antenna selected from at least two antennas in non-overlapping time intervals thereby generating a TSTD signal according to a predetermined switching pattern.

14. The transmitting method of claim 13, wherein the TSTD signal generating step comprises the steps of:

generating a switch controlling signal based on the switching pattern at a predetermined time; and

switching the PN-spread signal to a corresponding transmission antenna based on the switch controlling signal.

15. The transmitting method of claim 14, wherein the switch controlling step comprises the steps of:

generating a reference switching cycle signal;

counting clock pulses of a base station and outputting the counted value at the time point when the reference switching cycle value is generated;

outputting a switching pattern based on the counted value; and

generating the switch controlling signal according to the switching pattern.

16. The transmitting method of claim 15, wherein the switching pattern is at least one of a sequential switching pattern, a random switching pattern, a switching pattern with a uniform switching cycle, and a switching pattern with a variable switching

cycle, and the switch controlling signal is an integer multiple of an orthogonal code length.

17. A channel signal receiving method in a mobile communication system, comprising the steps of:

(1) despreding a pilot channel signal from an input signal and estimating phase and time values;

(2) selecting the estimated phase and time values according to the switching cycle and pattern of a TSTD signal received from a base station through at least two antennas; and

(3) detecting an TSTD dedicated channel signal based on the estimated time value, and correcting a phase error of the detected TSTD signal based on the estimated phase value, for demodulation.

18. The channel signal receiving method of claim 17, wherein step (3) further comprises the steps of:

PN-despreding the input signal at a time position indicated by the estimated time value;

despreding the PN-despread signal by a corresponding dedicated channel orthogonal code; and

correcting a phase error of the orthogonal despread signal based on the estimated phase value.